OVERVIEW

INTRODUCTION

Economists and policy makers have long considered research and development (R&D) to be a key component of economic growth. The contribution of R&D activities to local economies has been a topic of particular interest to State policymakers. This report, *State Science and Engineering Profiles and R&D Patterns: 1997-98*, provides statistics on the geographic distribution of R&D within the United States. R&D data for 52 areas—each of the 50 States, the District of Columbia and Puerto Rico—are derived from the several performer-based[1] surveys of the National Science Foundation's (NSF's) R&D Statistics Program. For each State (or geographic area), table 1 categorizes these data by major source of funds (industry, Federal Government, and academia), and by type of performer (industry, Federal Government, academia, Federally Funded Research and Development Centers (FFRDCs), and other nonprofit institutions).[2]

In 1997, total R&D expenditures in the United States were $211 billion, of which $199 billion could be attributed to expenditures within individual States, with the remainder falling under an undistributed, "other/unknown" category. The statistics and discussion below refer to State R&D levels in relation to the distributed total of $199 billion.

The "other/unknown" category includes R&D performed within the 50 States or the District of Columbia, for which survey respondents did not provide the specific location of such performance. It also includes R&D conducted by organizations within the United States that did not perform the actual R&D in a particular State or the District of Columbia, e.g., research conducted on marine vessels, and research in Puerto Rico.

In addition, this report includes science and engineering profiles for the 50 States, the District of Columbia, and Puerto Rico. These profiles were compiled from 15 sources, including NSF statistical reports and statistical reports from other Federal agencies, namely, the Department of Commerce (DOC), the Department of Labor (DOL), the Department of Education (ED), the U.S. Patent and Trademark Office, and the U.S. Small Business Administration (SBA). A complete listing of these sources is provided at the end of this overview.[3]

[1] In any discussion of R&D expenditures, an important distinction must be made between R&D "performance" (the situation in which R&D is actually carried out) and R&D funding "sources" (where the money for R&D originates). For example, a term such as "Federal R&D" is ambiguous in that it does not specify whether it is referring to performance or funding. The Federal Government is a much larger source of R&D funding (termed "Federal Funding of R&D") than a performer of R&D itself (termed "Federal Intramural R&D"). In the reporting of R&D by State, much more attention has been paid to R&D performance within States than R&D funding originating from states. Since R&D performance is an important component of the economic activity of the State, and the geographic location of funding organizations may have little bearing on economic activity within the same State, this report will focus on R&D performance.

[2] At present, data on R&D performed by nonprofit institutions within individual States include only R&D derived from Federal funding.

[3] Some data elements in this report come from sample surveys. All statements in the text based on sample survey data are statistically significant to the 0.05 level, unless otherwise noticed.

Table 1. State distribution of R&D expenditures, by performing sector and source of funds: 1997

Performing sector:		Total R&D	Federal Govt.	Industry[1]			U&Cs						U&C FFRDCs	Other nonprofit institutions	Nonprofit FFRDCs
Funding sector:	Rank in Total R&D			Total	Federal Govt.[1]	Industry[2]	Total	Federal Govt.	Non-fed. Govt.	Industry	U&Cs	Nonprofits	Federal Govt.[3]	Federal Govt.[4]	Federal Govt.[4]
	(In millions of current dollars)[5]														
United States, total		211,268	16,814	157,539	23,928	133,611	25,001	14,849	1,940	1,773	4,686	1,754	5,466	3,036	820
Alabama	25	1,637	660	589	189	399	369	231	5	30	85	18	0	19	0
Alaska	48	136	38	24	D	D	71	28	4	13	26	0	0	2	0
Arizona	21	2,410	144	1,854	677	1,177	377	198	10	19	137	13	29	6	0
Arkansas	45	272	49	118	D	D	102	35	29	8	24	6	0	2	0
California	1	41,670	1,454	34,011	5,977	28,034	2,979	2,028	129	160	440	221	2,549	474	203
Colorado	17	3,205	195	2,248	525	1,723	427	290	27	24	50	37	136	50	148
Connecticut	16	3,454	33	3,014	307	2,707	393	242	14	25	76	35	0	15	0
Delaware	31	1,089	10	1,009	8	1,001	65	32	3	3	20	7	0	4	0
District of Columbia	20	2,768	1,733	645	D	D	214	154	1	18	24	16	0	176	0
Florida	12	4,784	649	3,442	1,461	1,981	682	334	89	48	176	34	0	11	0
Georgia	22	2,272	225	1,273	212	1,062	766	347	69	73	252	24	0	7	0
Hawaii	44	275	54	87	55	32	120	72	28	6	13	0	0	13	0
Idaho	30	1,270	24	1,181	D	D	64	18	22	9	15	0	0	0	0
Illinois	8	8,034	77	6,248	163	6,085	930	530	54	50	220	75	725	54	0
Indiana	18	3,149	68	2,677	D	D	400	209	24	33	114	20	0	4	0
Iowa	34	980	29	578	D	D	342	162	53	24	84	19	28	3	0
Kansas	29	1,351	16	1,136	D	D	198	75	45	12	57	9	0	1	0
Kentucky	38	526	7	359	3	356	158	76	7	20	53	2	0	1	0
Louisiana	37	554	48	172	D	D	330	128	75	32	78	17	0	4	0
Maine	47	149	6	83	D	D	33	15	2	6	11	0	0	27	0
Maryland	10	7,395	4,569	1,425	456	970	1,242	927	81	40	114	80	0	155	4
Massachusetts	5	11,097	361	8,300	1,397	6,903	1,268	915	29	103	125	96	353	652	163
Michigan	2	13,991	108	13,009	121	12,888	842	454	51	57	206	75	0	32	0
Minnesota	15	3,605	35	3,116	362	2,754	363	200	51	24	54	34	0	92	0
Mississippi	41	370	165	73	D	D	125	62	29	9	14	10	0	7	0
Missouri	24	1,826	51	1,290	30	1,260	465	261	24	37	111	32	0	21	0
Montana	46	199	33	92	D	D	71	31	14	8	16	1	0	4	0
Nebraska	43	275	24	71	D	D	176	60	47	14	49	5	0	5	0
Nevada	39	517	46	380	D	D	88	44	4	5	31	4	0	2	0

See explanatory information and SOURCE at end of table.

Table 1. State distribution of R&D expenditures, by performing sector and source of funds: 1997

Performing sector:	Total R&D	Federal Govt.	Industry[1]			U&Cs						U&C FFRDCs	Other nonprofit institutions	Nonprofit FFRDCs
Funding sector:	Rank in Total R&D		Total	Federal Govt.[1]	Industry[2]	Total	Federal Govt.	Non-fed. Govt.	Industry	U&Cs	Nonprofits	Federal Govt.[3]	Federal Govt.[4]	Federal Govt.[4]
	(In millions of current dollars)[5]													
New Hampshire	35	799	37	652	D	D	108	67	8	5	15	12	0	2	0
New Jersey	4	12,067	459	11,069	117	10,952	462	224	37	26	140	35	59	16	2
New Mexico	19	3,028	366	1,310	D	D	219	145	15	10	42	7	1,122	10	0
New York	3	12,307	136	9,939	2,078	7,861	1,784	1,152	80	96	245	211	239	209	0
North Carolina	13	4,667	230	3,590	111	3,478	786	439	116	96	106	29	0	61	0
North Dakota	49	116	26	33	0	33	56	24	1	3	26	2	0	0	0
Ohio	11	7,145	681	5,608	604	5,004	764	418	70	83	144	49	0	92	0
Oklahoma	36	644	44	428	45	383	163	71	19	14	45	13	0	9	0
Oregon	27	1,520	90	1,102	28	1,075	291	195	32	10	36	18	0	37	0
Pennsylvania	7	8,209	151	6,609	672	5,937	1,241	808	42	139	183	70	32	175	0
Rhode Island	32	1,040	202	704	D	D	112	79	1	2	27	3	0	22	0
South Carolina	33	1,040	34	783	83	700	219	103	21	9	66	21	0	4	0
South Dakota	51	71	19	26	0	26	25	11	8	1	3	1	0	2	0
Tennessee	26	1,566	78	1,089	D	D	330	199	38	17	53	23	44	26	0
Texas	6	9,487	560	7,265	784	6,481	1,581	845	170	132	270	164	0	80	1
Utah	28	1,381	117	1,027	199	829	234	158	18	14	36	8	0	3	0
Vermont	42	314	7	246	D	D	60	34	3	5	11	6	0	1	0
Virginia	14	4,136	1,655	1,767	851	916	455	270	47	40	74	24	80	37	143
Washington	9	7,543	167	6,610	D	D	508	366	15	41	69	17	0	115	144
West Virginia	40	427	87	233	D	D	64	30	2	4	23	5	33	11	0
Wisconsin	23	2,256	43	1,707	29	1,678	497	284	41	19	98	56	0	9	0
Wyoming	50	87	9	28	0	28	48	15	6	2	24	1	0	2	0
Other/unknown		12,161	704	7,210	6,384	18,898	1,338	753	129	92	276	87	38	269	11

[1] Includes performance at industry FFRDCs.

[2] Industry sources of industry R&D expenditures include all non-federal sources of industry R&D expenditures.

[3] Includes total R&D expenditures of FFRDCs administered by academic institutions.

[4] Other sources of support for nonprofit institutions were unavailable.

[5] Industry R&D data are in reference to calendar years; other R&D data are in reference to fiscal years but may serve as approximations to calendar year data.

KEY: FFRDCs = Federally Funded Research and Development Centers
U&Cs = Universities and colleges
D = Data withheld to avoid disclosing operations of individual companies.

SOURCES: National Science Foundation/Division of Science Resources Studies. Data were derived from National Science Foundation/Division of Science Resources Studies, *Research and Development in Industry: 1997; Academic Research and Development Expenditures: Fiscal Year 1997;* and *Federal Funds for Research and Development: Fiscal Years 1997, 1998, and 1999.*

STATE DISTRIBUTION OF SECTOR-SPECIFIC R&D

R&D activities are highly concentrated in a small number of States. Thus, in 1997, California had the highest level of R&D expenditures—nearly $42 billion—representing approximately one-fifth of the $199 billion U.S. total. The six States with the highest levels of R&D expenditures—California, Michigan, New York, New Jersey, Massachusetts, and Texas (in decreasing order of magnitude)—accounted for almost one-half of the entire national expenditure. The top 10 States[4]—adding, in descending order, Pennsylvania, Illinois, Washington, and Maryland—accounted for nearly two-thirds of the national expenditure (table 1). Among these 10 States, California's R&D effort exceeded, by nearly a factor of three, the next-highest State, Michigan, with $14 billion in R&D expenditures. After Michigan, R&D levels declined relatively smoothly to approximately $7 billion for Maryland (table 2). The 20 highest-ranking States in R&D expenditures accounted for about 81 percent of the U.S. total; the lowest 20 States accounted for only 4 percent (table 3).

States that are national leaders in total R&D performance are usually ranked among the leading sites in industrial and academic R&D performance (table 2). For industrial R&D, nine of the top 10 States were among the top 10 for total R&D, with Ohio joining the top industrial R&D States replacing Maryland. For academic R&D, North Carolina and Georgia replaced New Jersey and Washington.

There was less commonality with the top 10 for total R&D among those States that performed the most Federal intramural research. Only four States were found in both top-10 lists: Maryland, California, Texas, and New Jersey. The six additions to the Federal intramural list, in descending order of Federal R&D performance, were the District of Columbia, Virginia, Ohio, Alabama, Florida, and New Mexico. Maryland ranked first among Federal R&D performers, followed by the District of Columbia, Virginia, and California.

The placement of Maryland, the District of Columbia, and Virginia as the top three in Federal R&D performance reflects the concentration of Federal facilities and

Table 2. R&D performance by sector and R&D as a percentage of GSP, for the top 10 R&D performing States: 1997

	Top 10 States in R&D performance		Top 10 States by performing sector			Top 10 States in R&D intensity (States with the highest R&D/GSP ratio)		
Rank	Total R&D (in millions of dollars)	All R&D performers in the State[1]	Industry[2]	Universities & colleges[3]	Federal Government	Top 10 States	R&D/GSP (percent)	GSP (preliminary, in billions of dollars)
1	41,670	California	California	California	Maryland	New Mexico	6.7	45.2
2	13,991	Michigan	Michigan	New York	District of Columbia	District of Columbia	5.3	52.4
3	12,307	New York	New Jersey	Texas	Virginia	Michigan	5.1	272.6
4	12,067	New Jersey	New York	Massachusetts	California	Massachusetts	5.0	221.0
5	11,097	Massachusetts	Massachusetts	Maryland	Ohio	Maryland	4.8	153.8
6	9,487	Texas	Texas	Pennsylvania	Alabama	Washington	4.4	172.3
7	8,209	Pennsylvania	Washington	Illinois	Florida	Idaho	4.4	29.1
8	8,034	Illinois	Pennsylvania	Michigan	Texas	New Jersey	4.1	294.1
9	7,543	Washington	Illinois	North Carolina	New Jersey	California	4.0	1,033.0
10	7,395	Maryland	Ohio	Georgia	New Mexico	Rhode Island	3.7	27.8

[1] Includes in-state R&D performance of industry, universities, Federal agencies, and FFRDCs. For the tabulations, States include the District of Columbia.

[2] Includes R&D activities of industry-administered FFRDCs located within these States.

[3] Includes R&D activities of university-administered FFRDCs located within these States.

KEY: GSP = Gross State product
FFRDC = Federally Funded Research and Development Center

SOURCE: National Science Foundation/Division of Science Resources Studies, *National Patterns of R&D Resources,* annual series; GSP data are from the Department of Commerce/Bureau of Economic Analysis.

[4] These ranks do not account for sampling errors in the level of industrial R&D performance in each State.

Table 3. Total R&D and GSP by State: 1997

Rank in total R&D	State	Total R&D	GSP	R&D/GSP	R&D/GSP	U.S. R&D	U.S. R&D
		(In millions of dollars)		Percent	Rank	Percent	Cumulative percent
	Total, U.S.	211,268					
1	California	41,670	1,033,016	4.03	9	19.72	19.72
2	Michigan	13,991	272,607	5.13	3	6.62	26.35
3	New York	12,307	651,652	1.89	25	5.83	32.17
4	New Jersey	12,067	294,055	4.10	8	5.71	37.88
5	Massachusetts	11,097	221,009	5.02	4	5.25	43.14
6	Texas	9,487	601,643	1.58	28	4.49	47.63
7	Pennsylvania	8,209	339,940	2.41	15	3.89	51.51
8	Illinois	8,034	393,532	2.04	21	3.80	55.31
9	Washington	7,543	172,253	4.38	6	3.57	58.88
10	Maryland	7,395	153,797	4.81	5	3.50	62.39
11	Ohio	7,145	320,506	2.23	17	3.38	65.77
12	Florida	4,784	380,607	1.26	31	2.26	68.03
13	North Carolina	4,667	218,888	2.13	18	2.21	70.24
14	Virginia	4,136	211,331	1.96	23	1.96	72.20
15	Minnesota	3,605	149,394	2.41	16	1.71	73.90
16	Connecticut	3,454	134,565	2.57	12	1.63	75.54
17	Colorado	3,205	126,084	2.54	13	1.52	77.06
18	Indiana	3,149	161,701	1.95	24	1.49	78.55
19	New Mexico	3,028	45,242	6.69	1	1.43	79.98
20	District of Columbia	2,768	52,372	5.29	2	1.31	81.29
21	Arizona	2,410	121,239	1.99	22	1.14	82.43
22	Georgia	2,272	229,473	0.99	38	1.08	83.51
23	Wisconsin	2,256	147,325	1.53	30	1.07	84.57
24	Missouri	1,826	152,100	1.20	33	0.86	85.44
25	Alabama	1,637	103,109	1.59	27	0.77	86.21
26	Tennessee	1,566	146,999	1.07	36	0.74	86.95
27	Oregon	1,520	98,367	1.54	29	0.72	87.67
28	Utah	1,381	55,417	2.49	14	0.65	88.33
29	Kansas	1,351	71,737	1.88	26	0.64	88.97
30	Idaho	1,270	29,149	4.36	7	0.60	89.57
31	Delaware	1,089	31,585	3.45	11	0.52	90.08
32	Rhode Island	1,040	27,806	3.74	10	0.49	90.58
33	South Carolina	1,040	93,259	1.11	35	0.49	91.07
34	Iowa	980	80,479	1.22	32	0.46	91.53
35	New Hampshire	799	38,106	2.10	19	0.38	91.91
36	Oklahoma	644	76,642	0.84	40	0.30	92.21
37	Louisiana	554	124,350	0.45	50	0.26	92.48
38	Kentucky	526	100,076	0.53	46	0.25	92.73
39	Nevada	517	57,407	0.90	39	0.24	92.97
40	West Virginia	427	38,228	1.12	34	0.20	93.17
41	Mississippi	370	58,314	0.63	43	0.17	93.35
42	Vermont	314	15,214	2.06	20	0.15	93.50
43	Nebraska	275	48,812	0.56	44	0.13	93.63
44	Hawaii	275	38,024	0.72	42	0.13	93.76

See explanatory information and SOURCE at end of table.

Table 3. Total R&D and GSP by State: 1997

Rank in total R&D	State	Total R&D	GSP	R&D/GSP	R&D/GSP	U.S. R&D	U.S. R&D
		(In millions of dollars)		Percent	Rank	Percent	Cumulative percent
45	Arkansas	272	58,479	0.46	49	0.13	93.88
46	Montana	199	19,160	1.04	37	0.09	93.98
47	Maine	149	30,156	0.49	48	0.07	94.05
48	Alaska	136	24,494	0.55	45	0.06	94.11
49	North Dakota	116	15,786	0.73	41	0.05	94.17
50	Wyoming	87	17,561	0.50	47	0.04	94.21
51	South Dakota	71	20,186	0.35	51	0.03	94.24
	Other/unknown[1]	12,161				5.76	100.00

[1] The "other/unknown" category includes R&D performed within the 50 States, or the District of Columbia, but where the specific location of such performance was not provided by survey respondents. It also includes R&D conducted by organizations within the United States, but where actual performance does not take place in a particular State or the District of Columbia, e.g., research conducted on marine vessels, and research in Puerto Rico. Finally, it also includes a small accounting difference due to the total for the U.S. being based on calendar year data, while data by State pertain to the fiscal year for non-industrial performance.

KEY: GSP = Gross State product

SOURCES: National Science Foundation/Division of Science Resources Studies, derived from *Research and Development in Industry: 1997; Academic Research and Development Expenditures, Fiscal Year 1997; Federal Funds for Research and Development: Fiscal Years 1997, 1998, and 1999;* and Department of Commerce, Bureau of Economic Analysis.

administrative offices within the National Capital area. Alabama, Florida, and New Mexico rank among the highest in Federal R&D because of their relatively high shares of Federal space- and defense-related R&D.

TEN-YEAR STATE R&D TRENDS

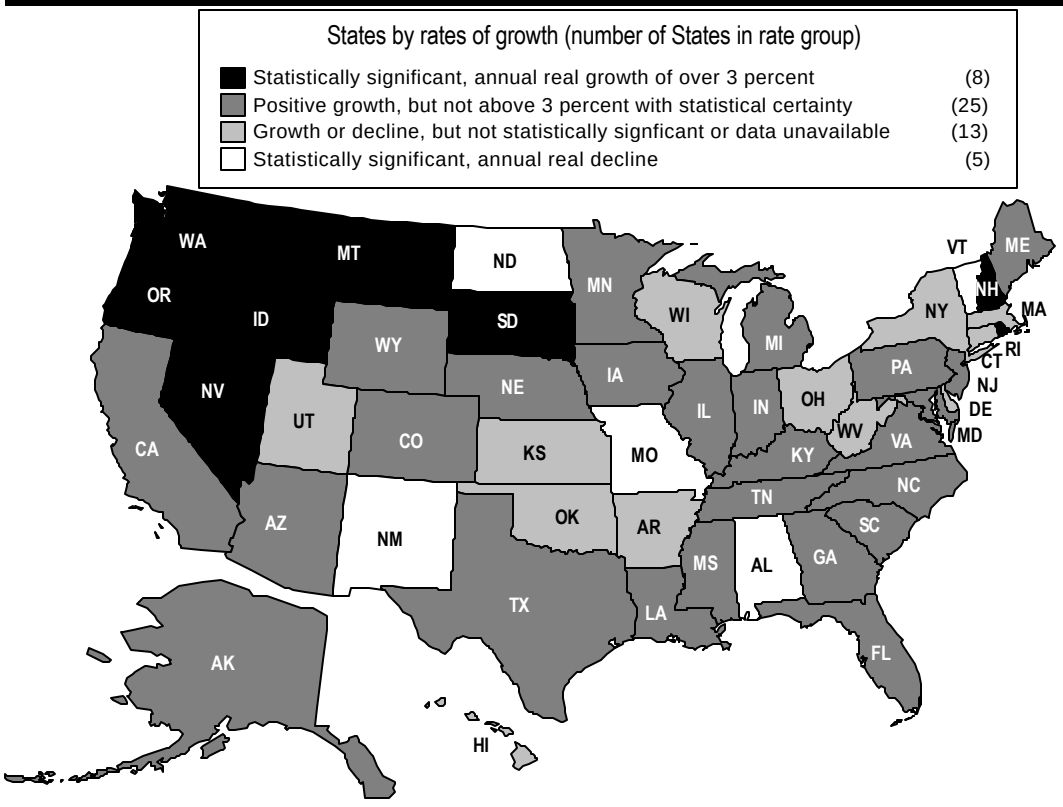
States have varied widely in their rates of R&D growth in recent years. For example, the average annual change in real R&D (adjusted for inflation) between 1987 and 1997 ranged from a growth of 14 percent for New Hampshire to a decline of 6 percent for Alabama. Real R&D growth for the nation as a whole averaged two percent per year over the same period.

Because of the variability of estimates for many areas smaller than the U.S. total when data are acquired through survey sampling, the growth rates in R&D performance observed for some States are not precise enough for comparative use. Nevertheless, several useful observations can be made regarding cases in which there is sufficient statistical precision.

As shown in figure 1, among the 51 regions examined, eight States were found to have statistically significant, real annual growth rates of over 3 percent between 1987 and 1997: Idaho, Montana, Nevada, New Hampshire, Oregon, Rhode Island, South Dakota, and Washington. Twenty-five other States had rates of real R&D growth that were positive with statistical certainty, but could not be said to be above 3 percent with statistical certainty. Another 13 States had growth or declines in real R&D, but which were not statistically different from no change in real R&D. Finally, five States had statistically signficant declines in real R&D: Alabama, Missouri, New Mexico, North Dakota, and Vermont.

Among the top 10 States in R&D expenditures in 1997, Washington had the highest growth rate—5 percent. The next highest growth rate among the top 10 was 3 percent for New Jersey; California's R&D grew at a rate of 2 percent during the 1987-97 period – the same rate as that of the Nation as a whole.

Figure 1. Distribution of States, by annual rate of real growth in R&D performance: 1987-97



NOTE: Growth rates for Delaware and the District of Columbia were not available.

SOURCES: National Science Foundation/Division of Science Resources Studies, *Academic Research and Development Expenditures: Fiscal Year 1997; Federal Funds for Research and Development Fiscal Years 1997, 1998, and 1999; and Research and Development in Industry: 1997.*

In most cases, these differences in rates reflect the sharp decline in Federal R&D support and the simultaneous dramatic rise in industrial R&D support that occurred during the period. For example, much of Alabama's decline in R&D could be attributed to a drop in Federal support for industrial R&D: over the decade, this support dwindled from $900 million (in current dollars) to $189 million. [5] In New Hampshire, on the other hand, the sharp rise in R&D is due primarily to an increase in industrial R&D performance (which is funded predominantly by industry) from $94 million to $652 million.

For States that have relatively small levels of R&D expenditures (e.g., States that are not among the top 10 in R&D), these growth rates tend to be influenced significantly by particular events, such as an individual company or government agency expanding or contracting its R&D activities. Therefore, caution should be used in interpreting differences among States. Variations in rates may not reflect differences among States in their policies toward R&D; specific circumstances (other than State policy) may have been more responsible for the observed differences. Likewise, one should not assume that the rates observed between 1987 and 1997 will necessarily continue in later years.

Historical Data on R&D by State and Performing Sector

Table 4 provides the same data as table 1 on State-level R&D by performer and source, but for all odd-numbered years between 1987 and 1995. Only odd-numbered years are included because the industry survey did not acquire State-level data in even-numbered years. These data may be useful for detailed analysis of changes in the composition of R&D within a State over time, but the user should use caution in recognizing that small changes may be due to sampling error. Only current dollars are provided, so that these numbers would not need to be adjusted with each new revision in the values of GDP deflators. However, because these values are in current dollars, any observed change in R&D on the basis of these values alone would also include the effect of inflation. In the analysis of ten-year growth trends, provided above, these levels of R&D expenditures had been converted to constant dollars, which allowed for measures of real growth in R&D between 1987 and 1997.

[5] These Federal R&D totals are based on reports by the performers of R&D and not by the Federal funding agencies. For detailed historical data on R&D expenditures by State and performer from 1987-95, see table 4.

Ratio of R&D to Gross State Product

States vary widely in the size of their economies, owing to differences in population, land area, infrastructure, natural resources, and history. Consequently, variations in the R&D expenditure levels of States may simply reflect differences in economic size or the nature of their R&D efforts. A simple way of controlling for the size effect is to measure each State's R&D level as a proportion of its gross State product (GSP). That proportion is referred to as R&D "intensity" or "concentration."

The Nation's total R&D to gross domestic product ratio was 2.6 percent in 1997. The top 10 States for R&D intensity in 1997 were—in descending order—New Mexico (6.7 percent), the District of Columbia, Michigan, Massachusetts, Maryland, Washington, Idaho, New Jersey, California, and Rhode Island (the last with an intensity of 3.7 percent). New Mexico's high R&D intensity is largely attributable to Federal (specifically Department of Energy) support of FFRDCs in the State.

Figure 2 illustrates the geographical distribution of States by R&D as a percentage of GSP. As shown, R&D concentration is relatively high in the Northeast and East North Central regions, with the exceptions of Maine, New York, and Wisconsin, which had R&D/GSP ratios below 1.9 percent. R&D concentration is relatively low in the West North Central and Southern regions, with the exceptions of Minnesota, North Carolina, and Virginia, which have R&D/GSP ratios above 1.9.

The Mountain and Pacific regions are quite mixed in R&D concentration. In the former region, New Mexico and Idaho have the highest R&D/GSP ratios, which are above 4.0; Wyoming and Nevada have estimated ratios below 1.0. Similarly, in the Pacific, California and Washington's ratios are 4.0 or higher, while the ratios for Alaska and Hawaii fall below 1.0.

Industrial R&D by State

States have always varied in terms of the levels and types of industrial operations they contain. Thus, they vary as well in the levels of R&D they contain by industrial sector. One measure of such variation among States is the extent to which their industrial R&D is in the nonmanufacturing sector, as opposed to the manufacturing sector. Among the top 10 States in 1997 industrial R&D performance, California, New Jersey, New York,

Table 4. State distribution of expenditures for R&D: performance by sector, categorized by sources of funds: 1987–97

Performing sector:		Total R&D	Federal Govt.	Industry			U&Cs						U&C FFRDCs	Other nonprofit institutions	Nonprofit FFRDCs
Funding sector:		Total R&D	Federal Govt.	Total	Federal Govt.[1]	Industry[2]	Total	Federal Govt.	Non-fed. Govt.	Industry	U&Cs	Nonprofits	Federal Govt.[3]	Federal Govt.[4]	Federal Govt.[4]
Location	Year[5]	(In thousands of current dollars)													
Alabama	1987	2,349,977	584,230	1,592,000	900,000	692,000	152,925	85,382	16,449	10,916	29,919	10,259	0	20,822	0
Alabama	1989	1,232,429	568,243	428,000	213,000	215,000	215,836	119,693	18,339	16,242	45,106	16,456	0	20,350	0
Alabama	1991	1,510,827	700,617	521,000	221,000	300,000	252,998	132,063	27,267	20,348	52,667	20,653	0	36,212	0
Alabama	1993	1,967,533	833,137	833,000	406,000	427,000	281,209	161,331	26,991	23,729	48,358	20,800	0	20,187	0
Alabama	1995	1,680,828	642,257	686,000	273,000	413,000	334,689	190,330	6,991	29,164	86,664	21,540	0	17,882	0
Alabama	1997	1,636,645	660,047	589,000	189,000	399,000	368,602	230,894	5,251	29,685	84,747	18,025	0	18,996	0
Alaska	1987	90,429	32,840	10,000	D	D	47,432	21,523	2,999	3,024	17,960	1,926	0	157	0
Alaska	1989	117,914	51,178	9,000	D	D	56,701	26,659	2,101	3,039	21,869	3,033	0	1,035	0
Alaska	1991	146,091	58,705	18,000	D	D	67,432	34,335	1,926	1,547	28,246	1,378	0	1,954	0
Alaska	1993	129,211	47,833	14,000	D	D	66,796	41,616	3,012	4,751	17,412	5	0	582	0
Alaska	1995	163,396	60,545	30,000	D	D	72,216	37,285	5,607	5,470	23,850	4	0	635	0
Alaska	1997	135,745	38,381	24,000	D	D	70,943	28,127	3,964	12,769	26,082	1	0	2,421	0
Arizona	1987	1,144,281	83,236	845,000	178,000	667,000	181,263	80,955	8,965	17,456	61,644	12,243	26,000	8,782	0
Arizona	1989	1,293,340	118,284	917,000	220,000	697,000	223,834	105,367	7,949	12,500	86,076	11,942	27,600	6,622	0
Arizona	1991	1,398,709	132,341	944,000	199,000	745,000	284,128	131,627	7,945	19,519	109,028	16,009	27,400	10,840	0
Arizona	1993	1,607,378	206,067	1,042,000	298,000	744,000	310,721	149,803	6,333	18,889	112,596	23,100	40,000	8,590	0
Arizona	1995	1,987,119	169,700	1,356,000	620,000	736,000	380,216	210,475	8,080	23,238	126,380	12,043	75,005	6,198	0
Arizona	1997	2,409,843	143,601	1,854,000	677,000	1,177,000	376,818	198,097	10,266	18,584	137,165	12,706	29,058	6,366	0
Arkansas	1987	195,660	24,196	135,000	D	D	35,529	12,257	9,352	2,829	8,028	3,063	0	935	0
Arkansas	1989	120,875	25,071	51,000	D	D	43,676	14,213	12,186	4,123	9,521	3,633	0	1,128	0
Arkansas	1991	198,271	35,180	106,000	D	D	55,081	20,178	13,958	4,514	12,945	3,486	0	2,010	0
Arkansas	1993	301,143	40,657	185,000	D	D	74,011	25,362	23,666	6,767	14,774	3,442	0	1,475	0
Arkansas	1995	329,500	57,563	181,000	D	D	87,799	33,348	23,779	7,693	19,717	3,262	0	3,138	0
Arkansas	1997	271,703	49,469	118,000	D	D	102,204	35,021	29,227	7,570	23,985	6,401	0	2,030	0
California	1987	25,520,939	2,011,033	19,475,000	10,963,000	8,512,000	1,554,787	1,066,099	36,570	72,260	289,604	90,254	2,097,000	383,119	0
California	1989	30,885,676	2,478,100	23,675,000	12,857,000	10,818,000	1,850,062	1,285,165	43,546	83,218	321,615	116,518	2,385,300	252,148	245,066
California	1991	28,346,287	1,885,275	21,279,000	8,911,000	12,368,000	2,146,235	1,436,542	84,176	86,265	389,156	150,096	2,562,800	326,127	146,850
California	1993	33,721,294	1,785,138	26,541,000	7,463,000	19,078,000	2,380,144	1,629,545	112,454	99,291	367,857	170,997	2,499,000	338,161	177,851
California	1995	36,133,144	1,843,729	28,710,000	6,925,000	21,785,000	2,594,280	1,796,691	107,055	120,080	372,941	197,513	2,377,815	361,960	245,360
California	1997	41,669,723	1,454,133	34,011,000	5,977,000	28,034,000	2,978,575	2,028,296	128,617	160,304	439,942	221,416	2,549,108	473,915	202,992

See explanatory information and SOURCE at end of table.

Table 4. State distribution of expenditures for R&D: performance by sector, categorized by sources of funds: 1987–97

Performing sector:		Total R&D	Federal Govt.	Industry			U&Cs						U&C FFRDCs	Other nonprofit institutions	Nonprofit FFRDCs
Funding sector:		Total R&D	Federal Govt.	Total	Federal Govt.[1]	Industry[2]	Total	Federal Govt.	Non-fed. Govt.	Industry	U&Cs	Nonprofits	Federal Govt.[3]	Federal Govt.[4]	Federal Govt.[4]
Location	Year[5]	(In thousands of current dollars)													
Colorado	1987	1,704,333	132,807	1,261,000	282,000	979,000	185,699	136,003	8,771	8,728	17,682	14,515	52,000	72,827	0
Colorado	1989	1,648,885	116,787	1,162,000	251,000	911,000	226,555	167,043	10,679	14,381	17,735	16,717	63,300	29,354	50,889
Colorado	1991	NA	275,312	D	D	1,751,000	260,587	187,819	12,905	16,481	23,078	20,304	78,300	33,718	72,558
Colorado	1993	2,864,058	169,821	2,111,000	252,000	1,859,000	331,081	222,107	18,026	23,651	41,797	25,500	99,000	41,852	111,304
Colorado	1995	2,603,149	167,869	1,865,000	274,000	1,591,000	393,809	260,247	21,998	24,470	51,690	35,404	125,310	46,418	4,743
Colorado	1997	3,205,211	195,364	2,248,000	525,000	1,723,000	427,435	289,514	26,833	23,756	50,422	36,910	135,980	50,078	148,354
Connecticut	1987	2,471,219	17,719	2,216,000	632,000	1,584,000	230,790	155,717	2,495	9,298	39,761	23,519	0	6,710	0
Connecticut	1989	2,744,751	37,810	2,410,000	680,000	1,730,000	284,410	187,212	5,430	11,630	56,999	23,139	0	12,531	0
Connecticut	1991	1,917,105	46,602	1,535,000	504,000	1,031,000	320,935	197,120	5,996	16,121	73,778	27,920	0	14,568	0
Connecticut	1993	2,808,827	52,905	2,373,000	419,000	1,954,000	364,708	220,562	10,067	18,351	80,829	34,899	0	18,214	0
Connecticut	1995	4,310,652	17,690	3,906,000	389,000	3,517,000	377,225	227,915	18,732	20,327	78,243	32,008	0	9,737	0
Connecticut	1997	3,454,151	32,731	3,014,000	307,000	2,707,000	392,668	242,385	13,730	25,387	76,391	34,775	0	14,752	0
Delaware	1987	NA	2,874	D	D	D	31,681	13,662	1,995	3,659	10,117	2,248	0	2,647	0
Delaware	1989	NA	3,133	D	D	D	37,194	17,083	2,603	4,073	11,125	2,310	0	2,110	0
Delaware	1991	NA	8,605	D	D	D	44,696	20,053	4,024	4,732	12,724	3,163	0	2,883	0
Delaware	1993	1,248,672	12,053	1,181,000	24,000	1,157,000	52,627	26,170	3,710	4,857	13,937	3,953	0	2,992	0
Delaware	1995	1,148,632	15,477	1,077,000	12,000	1,065,000	53,161	27,352	2,144	3,681	14,560	5,424	0	2,994	0
Delaware	1997	1,088,697	10,207	1,009,000	8,000	1,001,000	65,095	32,031	2,977	3,361	20,125	6,601	0	4,395	0
District of Columbia	1987	NA	1,208,569	D	D	D	85,470	62,968	484	4,192	11,642	6,184	0	100,959	0
District of Columbia	1989	NA	1,521,715	D	D	23,000	111,325	84,274	480	7,924	13,022	5,625	0	136,744	0
District of Columbia	1991	1,736,670	1,432,998	40,000	16,000	24,000	118,398	86,793	463	7,279	12,718	11,145	0	145,274	0
District of Columbia	1993	2,543,172	1,712,811	540,000	21,000	519,000	145,218	100,345	1,038	10,313	18,346	15,176	0	144,543	600
District of Columbia	1995	3,128,187	2,106,208	672,000	17,000	656,000	181,461	132,770	814	13,297	19,937	14,643	0	168,518	0
District of Columbia	1997	2,767,902	1,732,539	645,000	D	D	214,019	153,846	1,267	18,381	24,092	16,433	0	175,954	390
Florida	1987	3,136,347	719,058	2,133,000	892,000	1,241,000	278,847	129,474	13,889	20,334	98,188	16,962	0	5,442	0
Florida	1989	3,374,947	642,074	2,341,000	1,167,000	1,174,000	385,556	200,742	25,655	20,660	112,906	25,593	0	6,317	0
Florida	1991	3,699,966	657,605	2,599,000	934,000	1,665,000	438,054	220,683	36,736	35,690	116,339	28,606	0	5,307	0
Florida	1993	3,525,284	607,692	2,425,000	970,000	1,455,000	488,551	267,717	31,641	40,565	119,937	28,691	0	4,041	0
Florida	1995	5,222,709	554,440	4,101,000	1,634,000	2,467,000	559,104	317,081	41,466	36,382	135,110	29,065	0	8,165	0
Florida	1997	4,783,893	649,376	3,442,000	1,461,000	1,981,000	681,508	333,828	89,003	48,304	176,142	34,231	0	11,009	0

See explanatory information and SOURCE at end of table.

Table 4. State distribution of expenditures for R&D: performance by sector, categorized by sources of funds: 1987–97

Performing sector:		Total R&D	Federal Govt.	Industry			U&Cs						U&C FFRDCs	Other nonprofit institutions	Nonprofit FFRDCs
Funding sector:		Total R&D	Federal Govt.	Total	Federal Govt.[1]	Industry[2]	Total	Federal Govt.	Non-fed. Govt.	Industry	U&Cs	Nonprofits	Federal Govt.[3]	Federal Govt.[4]	Federal Govt.[4]
Location	Year[5]	(In thousands of current dollars)													
Georgia	1987	1,430,455	96,266	1,001,000	D	D	331,000	151,367	39,621	34,196	95,827	9,989	0	2,189	0
Georgia	1989	1,309,760	157,925	719,000	D	D	424,424	210,248	40,141	35,635	126,231	12,169	0	8,411	0
Georgia	1991	1,478,861	121,008	868,000	89,000	779,000	484,019	238,664	43,222	40,010	149,645	12,478	0	5,834	0
Georgia	1993	1,577,360	159,002	860,000	63,000	797,000	546,960	273,079	39,325	51,968	167,509	15,079	0	11,398	0
Georgia	1995	2,112,474	272,178	1,175,000	142,000	1,031,000	657,530	302,390	53,611	55,018	221,785	24,726	0	7,766	0
Georgia	1997	2,271,517	225,150	1,273,000	212,000	1,062,000	766,346	347,407	68,844	73,284	252,398	24,413	0	7,021	0
Hawaii	1987	158,274	23,218	73,000	54,000	19,000	57,345	34,472	19,317	261	2,591	704	0	4,711	0
Hawaii	1989	123,204	36,400	9,000	2,000	7,000	70,733	40,574	24,759	799	3,686	915	0	7,071	0
Hawaii	1991	144,656	44,537	11,000	D	D	78,166	44,857	27,321	856	3,391	1,741	0	10,953	0
Hawaii	1993	380,150	41,703	255,000	D	D	73,961	41,362	27,099	151	3,109	2,240	0	9,486	0
Hawaii	1995	169,252	62,303	14,000	D	D	78,429	44,238	26,789	299	3,738	3,365	0	14,520	0
Hawaii	1997	274,632	54,318	87,000	55,000	32,000	120,107	72,421	28,440	5,944	13,297	5	0	13,207	0
Idaho	1987	528,396	15,342	488,000	386,000	102,000	24,779	8,988	8,314	2,899	4,436	142	0	275	0
Idaho	1989	NA	18,785	D	D	161,000	33,191	12,585	8,112	4,199	8,148	147	0	531	0
Idaho	1991	NA	36,666	D	D	D	41,437	15,681	8,604	5,050	11,697	405	0	777	0
Idaho	1993	477,563	37,396	391,000	D	D	48,774	17,026	12,550	7,286	11,068	844	0	393	0
Idaho	1995	913,961	27,792	827,000	D	D	58,621	19,710	13,615	7,408	16,350	1,538	0	548	0
Idaho	1997	1,269,685	24,092	1,181,000	D	D	64,278	18,103	21,752	9,151	14,802	470	0	315	0
Illinois	1987	5,337,890	72,532	4,284,000	940,000	3,344,000	498,221	293,929	30,610	23,791	117,826	32,065	444,000	39,137	0
Illinois	1989	5,305,752	59,321	4,050,000	D	D	602,558	338,082	33,881	38,990	150,694	40,911	528,400	65,473	0
Illinois	1991	6,413,236	68,151	5,027,000	190,000	4,837,000	697,565	361,461	52,573	49,583	177,424	56,524	573,500	47,020	0
Illinois	1993	6,777,207	83,136	5,242,000	236,000	5,006,000	757,508	424,745	45,716	44,745	178,026	64,276	649,000	45,563	0
Illinois	1995	7,486,236	80,626	5,776,000	146,000	5,630,000	817,640	467,952	46,903	43,048	195,052	64,685	770,554	41,416	0
Illinois	1997	8,033,737	77,224	6,248,000	163,000	6,085,000	929,639	529,803	53,968	50,156	220,259	75,453	724,565	54,309	0
Indiana	1987	2,197,318	64,245	1,944,000	353,000	1,591,000	188,086	111,413	15,772	17,203	37,627	6,071	0	987	0
Indiana	1989	2,120,117	74,520	1,815,000	D	D	227,266	136,040	18,911	18,419	43,658	10,238	0	3,331	0
Indiana	1991	2,346,791	92,036	1,988,000	226,000	1,762,000	262,508	143,761	20,347	19,726	61,425	17,249	0	4,247	0
Indiana	1993	2,560,252	77,330	2,177,000	D	D	302,811	167,743	20,552	22,535	65,991	25,990	0	3,111	0
Indiana	1995	3,162,376	62,061	2,721,000	382,000	2,339,000	375,719	197,095	22,463	34,542	101,283	20,336	0	3,596	0
Indiana	1997	3,149,259	68,272	2,677,000	D	D	400,399	209,227	23,826	33,321	113,903	20,122	0	3,588	0

See explanatory information and SOURCE at end of table.

Table 4. State distribution of expenditures for R&D: performance by sector, categorized by sources of funds: 1987–97

Performing sector:		Total R&D	Federal Govt.	Industry			U&Cs						U&C FFRDCs	Other nonprofit institutions	Nonprofit FFRDCs
Funding sector:		Total R&D	Federal Govt.	Total	Federal Govt.[1]	Industry[2]	Total	Federal Govt.	Non-fed. Govt.	Industry	U&Cs	Nonprofits	Federal Govt.[3]	Federal Govt.[4]	Federal Govt.[4]
Location	Year[5]	(In thousands of current dollars)													
Iowa	1987	540,156	20,217	343,000	D	D	157,539	76,915	16,653	6,212	49,668	8,091	19,000	400	0
Iowa	1989	616,408	20,447	363,000	D	D	209,394	103,360	24,839	14,711	60,863	5,621	21,800	1,767	0
Iowa	1991	777,130	26,977	461,000	D	D	259,437	123,858	34,147	14,372	74,471	12,589	26,400	3,316	0
Iowa	1993	902,050	30,424	533,000	D	D	298,745	145,006	38,218	17,907	80,919	16,695	37,000	2,881	0
Iowa	1995	1,391,005	37,257	998,000	D	D	322,769	163,620	47,279	19,391	77,793	14,686	31,925	1,054	0
Iowa	1997	979,747	29,043	578,000	D	D	341,772	162,060	52,713	24,226	83,880	18,893	27,680	3,252	0
Kansas	1987	1,282,752	9,073	1,179,000	D	D	93,931	37,386	20,031	5,433	27,607	3,474	0	748	0
Kansas	1989	522,687	9,034	404,000	94,000	310,000	107,856	44,292	24,159	5,187	30,204	4,014	0	1,797	0
Kansas	1991	NA	11,961	D	D	D	124,174	43,913	28,967	7,292	39,897	4,105	0	5,219	0
Kansas	1993	463,570	12,198	292,000	47,000	245,000	154,103	59,635	36,640	7,527	44,215	6,086	0	5,269	0
Kansas	1995	763,702	12,296	569,000	D	D	181,496	70,026	39,353	11,434	52,517	8,166	0	910	0
Kansas	1997	1,350,536	15,622	1,136,000	D	D	197,586	75,116	45,002	11,907	56,752	8,809	0	1,328	0
Kentucky	1987	353,868	26,692	249,000	D	D	78,008	30,778	10,841	6,715	26,545	3,129	0	168	0
Kentucky	1989	343,099	31,159	226,000	D	226,000	83,998	32,963	7,113	7,516	30,593	5,813	0	1,942	0
Kentucky	1991	316,616	62,279	154,000	D	D	97,989	38,386	6,122	10,569	38,008	4,904	0	2,348	0
Kentucky	1993	428,684	15,728	289,000	7,000	282,000	122,409	55,698	6,198	13,575	42,013	4,925	0	1,547	0
Kentucky	1995	593,797	5,911	452,000	4,000	448,000	134,784	59,811	9,589	16,627	43,883	4,874	0	1,102	0
Kentucky	1997	525,613	7,289	359,000	3,000	356,000	158,238	75,649	7,394	20,016	53,122	2,057	0	1,086	0
Louisiana	1987	317,932	34,619	134,000	D	D	148,563	54,367	31,850	7,154	42,639	12,553	0	750	0
Louisiana	1989	385,930	36,410	168,000	D	D	180,032	69,219	40,758	8,193	47,129	14,733	0	1,488	0
Louisiana	1991	453,098	43,104	172,000	16,000	156,000	235,726	98,860	62,167	15,678	44,184	14,837	0	2,268	0
Louisiana	1993	469,705	42,557	170,000	D	D	255,171	95,891	64,306	16,508	61,267	17,199	0	1,977	0
Louisiana	1995	422,967	45,108	61,000	D	D	314,996	135,838	71,898	21,317	66,446	19,497	0	1,863	0
Louisiana	1997	554,255	47,910	172,000	D	D	330,131	128,017	74,861	32,231	78,094	16,928	0	4,214	0
Maine	1987	76,367	5,493	41,000	D	41,000	16,952	7,787	315	2,051	5,740	1,059	0	12,922	0
Maine	1989	72,733	4,394	33,000	D	33,000	19,974	8,288	584	4,002	6,567	533	0	15,365	0
Maine	1991	NA	13,862	D	D	D	27,082	10,062	2,197	4,719	9,504	600	0	16,456	0
Maine	1993	113,937	13,003	59,000	D	D	24,879	8,959	1,711	4,117	9,674	418	0	17,055	0
Maine	1995	345,449	4,238	286,000	D	D	31,901	15,789	2,005	4,158	9,357	592	0	23,310	0
Maine	1997	148,620	5,685	83,000	D	D	33,144	15,066	1,551	5,609	10,526	392	0	26,791	0

See explanatory information and SOURCE at end of table.

Table 4. State distribution of expenditures for R&D: performance by sector, categorized by sources of funds: 1987–97

Performing sector:		Total R&D	Federal Govt.	Industry			U&Cs						U&C FFRDCs	Other nonprofit institutions	Nonprofit FFRDCs
Funding sector:		Total R&D	Federal Govt.	Total	Federal Govt.[1]	Industry[2]	Total	Federal Govt.	Non-fed. Govt.	Industry	U&Cs	Nonprofits	Federal Govt.[3]	Federal Govt.[4]	Federal Govt.[4]
Location	Year[5]	(In thousands of current dollars)													
Maryland	1987	4,623,170	2,507,828	1,350,000	608,000	742,000	723,915	576,698	50,425	25,803	59,733	11,256	0	41,427	0
Maryland	1989	4,972,713	2,915,588	1,088,000	552,000	536,000	900,007	705,292	61,216	35,556	74,426	23,517	0	68,533	585
Maryland	1991	5,736,048	3,332,276	1,203,000	666,000	537,000	1,050,023	787,317	79,047	39,832	113,214	30,613	0	149,107	1,642
Maryland	1993	7,530,401	4,116,718	2,076,000	1,287,000	789,000	1,128,066	842,053	90,237	47,604	115,976	32,196	0	204,180	5,437
Maryland	1995	6,865,287	4,472,415	1,075,000	287,000	788,000	1,159,866	894,585	75,759	55,111	84,508	49,903	0	156,442	1,564
Maryland	1997	7,395,409	4,569,181	1,425,000	456,000	970,000	1,242,151	927,015	81,381	40,098	114,075	79,582	0	154,995	4,082
Massachusetts	1987	7,773,057	575,855	5,492,000	1,468,000	4,024,000	719,581	536,999	18,390	64,806	37,790	61,596	354,000	631,621	0
Massachusetts	1989	7,948,303	401,091	5,825,000	1,691,000	4,134,000	867,521	621,789	18,529	78,727	58,681	89,795	364,100	419,725	70,866
Massachusetts	1991	8,565,279	277,787	6,335,000	1,480,000	4,855,000	953,708	680,168	13,090	90,390	71,025	99,035	389,000	433,698	176,086
Massachusetts	1993	9,497,975	383,885	6,952,000	1,878,000	5,074,000	1,105,791	771,864	15,462	98,270	91,877	128,318	355,000	525,805	175,494
Massachusetts	1995	9,969,508	315,749	7,416,000	1,458,000	5,958,000	1,147,150	824,826	13,240	89,409	92,116	127,559	344,657	587,363	158,589
Massachusetts	1997	11,096,958	361,118	8,300,000	1,397,000	6,903,000	1,268,356	915,187	29,248	102,848	124,784	96,289	352,591	652,158	162,735
Michigan	1987	7,919,304	87,364	7,415,000	115,000	7,300,000	396,580	207,729	30,320	25,146	103,830	29,555	0	20,360	0
Michigan	1989	9,058,245	71,349	8,468,000	99,000	8,369,000	487,192	263,506	35,983	36,310	116,135	35,258	0	31,704	0
Michigan	1991	8,850,565	91,833	8,116,000	89,000	8,027,000	601,189	309,592	42,539	43,684	152,841	52,533	0	41,543	0
Michigan	1993	10,777,535	95,717	9,924,000	153,000	9,771,000	699,957	377,278	39,541	47,390	172,114	63,634	0	57,861	0
Michigan	1995	13,274,875	82,008	12,388,000	148,000	12,240,000	755,089	417,755	48,961	50,629	180,866	56,878	0	49,778	0
Michigan	1997	13,990,795	107,749	13,009,000	121,000	12,888,000	842,303	453,776	50,749	57,149	205,580	75,049	0	31,743	0
Minnesota	1987	2,529,453	26,388	2,242,000	D	D	222,381	109,003	37,287	11,056	39,371	25,664	0	38,684	0
Minnesota	1989	2,398,568	31,036	2,066,000	D	D	258,614	132,880	42,542	12,389	43,713	27,090	0	42,918	0
Minnesota	1991	2,227,672	40,468	1,810,000	150,000	1,660,000	331,471	164,887	53,614	19,270	60,904	32,796	0	45,733	0
Minnesota	1993	2,922,121	40,129	2,458,000	378,000	2,080,000	332,033	174,716	49,861	21,524	64,840	21,092	0	91,959	0
Minnesota	1995	3,087,438	30,139	2,636,000	315,000	2,321,000	336,524	194,819	49,543	23,427	46,235	22,500	0	84,775	0
Minnesota	1997	3,605,451	34,573	3,116,000	362,000	2,754,000	363,095	200,149	50,539	24,196	53,731	34,480	0	91,783	0
Mississippi	1987	236,427	127,489	44,000	D	D	59,882	24,532	16,775	4,282	8,897	5,396	0	5,056	0
Mississippi	1989	268,090	130,448	56,000	D	D	78,922	35,747	20,493	5,439	9,670	7,573	0	2,720	0
Mississippi	1991	302,380	157,156	41,000	D	D	100,383	52,853	20,886	8,892	12,132	5,620	0	3,841	0
Mississippi	1993	324,189	162,622	52,000	D	D	105,739	54,715	21,836	9,824	10,960	8,404	0	3,828	0
Mississippi	1995	314,710	132,616	66,000	D	D	112,789	62,597	23,778	8,912	11,211	6,291	0	3,305	0
Mississippi	1997	369,557	165,297	73,000	D	D	124,601	62,350	29,324	9,169	13,623	10,135	0	6,659	0

See explanatory information and SOURCE at end of table.

Table 4. State distribution of expenditures for R&D: performance by sector, categorized by sources of funds: 1987–97

Performing sector:		Total R&D	Federal Govt.	Industry			U&Cs						U&C FFRDCs	Other nonprofit institutions	Nonprofit FFRDCs
Funding sector:		Total R&D	Federal Govt.	Total	Federal Govt.[1]	Industry[2]	Total	Federal Govt.	Non-fed. Govt.	Industry	U&Cs	Nonprofits	Federal Govt.[3]	Federal Govt.[4]	Federal Govt.[4]
Location	Year[5]	(In thousands of current dollars)													
Missouri	1987	2,171,482	46,007	1,905,000	D	D	205,597	113,146	11,753	19,325	49,579	11,794	0	14,878	0
Missouri	1989	2,709,978	58,176	2,380,000	D	D	255,009	139,677	14,509	25,151	59,615	16,057	0	16,793	0
Missouri	1991	NA	71,220	D	D	D	305,780	165,099	19,061	30,195	67,335	24,090	0	22,217	0
Missouri	1993	1,788,896	51,288	1,375,000	D	D	344,566	190,959	18,959	31,492	78,490	24,666	0	18,042	0
Missouri	1995	2,498,360	55,445	2,028,000	584,000	1,443,000	397,192	212,750	21,486	36,639	92,974	33,343	0	17,723	0
Missouri	1997	1,826,338	50,526	1,290,000	30,000	1,260,000	464,809	260,668	24,101	36,669	111,305	32,066	0	21,003	0
Montana	1987	54,381	17,763	7,000	0	7,000	29,425	11,299	7,325	3,197	7,604	0	0	193	0
Montana	1989	NA	20,877	D	D	5,000	32,450	11,552	7,919	3,242	9,534	203	0	1,077	0
Montana	1991	NA	26,133	D	D	D	38,149	13,801	8,884	4,406	10,820	238	0	1,340	0
Montana	1993	90,438	27,075	14,000	D	D	48,080	21,399	9,029	3,234	14,011	407	0	1,283	0
Montana	1995	119,109	33,553	17,000	D	D	66,879	27,382	12,914	5,825	20,172	586	0	1,677	0
Montana	1997	199,351	33,199	92,000	D	D	70,591	31,261	14,368	8,470	15,684	808	0	3,561	0
Nebraska	1987	160,209	21,899	62,000	D	D	74,468	33,275	16,123	6,664	14,893	3,513	0	1,842	0
Nebraska	1989	181,706	22,074	64,000	D	D	93,506	36,761	22,926	9,098	20,676	4,045	0	2,126	0
Nebraska	1991	210,756	21,920	59,000	7,000	52,000	123,711	40,597	35,817	7,845	34,780	4,672	0	6,125	0
Nebraska	1993	294,531	24,730	128,000	14,000	114,000	135,737	38,023	39,576	8,891	36,406	12,841	0	6,064	0
Nebraska	1995	335,930	23,132	150,000	D	D	157,044	54,746	42,331	10,933	45,536	3,498	0	5,754	0
Nebraska	1997	275,359	23,741	71,000	D	D	175,592	60,388	47,089	13,686	49,290	5,139	0	5,026	0
Nevada	1987	167,996	76,509	57,000	D	D	34,254	18,563	1,973	3,983	8,805	930	0	233	0
Nevada	1989	152,642	77,198	29,000	D	D	45,555	26,587	2,682	4,296	10,396	1,594	0	889	0
Nevada	1991	261,232	108,614	83,000	63,000	20,000	66,742	38,221	2,608	5,323	19,675	915	0	2,876	0
Nevada	1993	218,503	71,044	67,000	D	D	79,124	43,196	4,361	5,245	25,193	1,129	0	1,335	0
Nevada	1995	445,028	34,669	322,000	D	D	86,902	47,708	6,460	6,941	24,798	995	0	1,457	0
Nevada	1997	516,544	46,025	380,000	D	D	88,331	43,934	4,411	5,464	30,749	3,773	0	2,188	0
New Hampshire	1987	164,130	19,006	94,000	D	D	50,928	34,633	2,045	2,081	8,114	4,055	0	196	0
New Hampshire	1989	NA	21,510	D	D	95,000	62,172	41,816	2,646	2,951	9,333	5,426	0	97	0
New Hampshire	1991	NA	88,342	D	D	102,000	78,975	52,833	4,375	3,997	10,225	7,545	0	330	0
New Hampshire	1993	438,620	88,839	248,000	D	D	99,475	67,727	5,846	4,842	11,768	9,292	0	2,306	0
New Hampshire	1995	597,697	30,902	472,000	36,000	436,000	93,073	60,131	3,963	3,919	12,948	12,112	0	1,722	0
New Hampshire	1997	798,601	36,861	652,000	D	D	107,505	67,282	7,990	4,880	15,058	12,295	0	2,235	0

See explanatory information and SOURCE at end of table.

Table 4. State distribution of expenditures for R&D: performance by sector, categorized by sources of funds: 1987–97

Performing sector:		Total R&D	Federal Govt.	Industry			U&Cs						U&C FFRDCs	Other nonprofit institutions	Nonprofit FFRDCs
Funding sector:		Total R&D	Federal Govt.	Total	Federal Govt.[1]	Industry[2]	Total	Federal Govt.	Non-fed. Govt.	Industry	U&Cs	Nonprofits	Federal Govt.[3]	Federal Govt.[4]	Federal Govt.[4]
Location	Year[5]	(In thousands of current dollars)													
New Jersey	1987	6,724,917	255,275	6,141,000	457,000	5,684,000	214,696	95,294	37,489	11,780	55,142	14,991	107,000	6,946	0
New Jersey	1989	7,228,887	429,755	6,381,000	601,000	5,780,000	283,897	119,237	45,150	16,428	82,798	20,284	112,600	21,635	0
New Jersey	1991	8,777,671	512,928	7,810,000	855,000	6,955,000	352,310	150,044	43,361	19,502	114,157	25,246	90,800	11,528	105
New Jersey	1993	9,180,997	509,310	8,162,000	378,000	7,784,000	373,816	166,835	36,361	26,115	116,307	28,198	116,000	11,876	7,995
New Jersey	1995	9,128,185	343,667	8,200,000	197,000	8,002,000	443,371	208,934	39,535	25,861	135,607	33,434	125,685	11,332	4,130
New Jersey	1997	12,067,086	459,286	11,069,000	117,000	10,952,000	462,052	224,084	37,274	26,186	139,540	34,968	59,146	15,641	1,961
New Mexico	1987	2,392,370	420,821	993,000	906,000	87,000	132,145	75,923	17,908	20,123	14,187	4,004	835,000	11,404	0
New Mexico	1989	2,679,324	593,878	1,034,000	D	D	136,189	76,777	14,612	16,433	17,860	10,507	902,400	4,857	8,000
New Mexico	1991	2,589,385	392,967	1,064,000	1,001,000	63,000	170,139	94,309	15,467	19,530	28,762	12,071	947,600	7,241	7,438
New Mexico	1993	2,751,608	503,783	962,000	D	D	186,750	113,060	13,998	18,743	28,507	12,442	1,084,000	6,762	8,313
New Mexico	1995	3,295,475	481,047	1,461,000	1,380,000	81,000	230,393	156,554	17,298	10,696	38,562	7,283	1,109,400	6,218	7,417
New Mexico	1997	3,027,688	366,253	1,310,000	D	D	219,150	144,639	14,954	9,915	42,442	7,200	1,121,670	10,362	253
New York	1987	8,185,452	160,073	6,559,000	3,426,000	13,904,000	1,108,478	758,040	53,349	62,173	126,931	107,985	221,000	136,901	0
New York	1989	9,877,995	89,334	8,071,000	1,480,000	6,591,000	1,311,643	854,137	68,474	70,598	170,970	147,464	255,200	150,818	0
New York	1991	10,315,493	173,988	8,268,000	1,558,000	6,710,000	1,419,765	918,063	75,490	85,282	190,624	150,306	283,900	169,570	270
New York	1993	10,973,876	131,440	8,820,000	1,392,000	7,428,000	1,544,702	1,052,171	75,571	87,804	180,217	148,939	293,000	184,734	0
New York	1995	10,954,561	117,250	8,651,000	1,821,000	6,831,000	1,702,414	1,107,468	95,941	98,200	206,258	194,547	281,148	202,749	0
New York	1997	12,306,752	136,215	9,939,000	2,078,000	7,861,000	1,783,810	1,151,542	80,142	95,778	245,093	211,255	239,052	208,675	0
North Carolina	1987	2,212,322	129,508	1,741,000	5,000	1,736,000	313,819	195,177	54,897	23,825	25,757	14,163	0	27,995	0
North Carolina	1989	1,820,827	59,738	1,305,000	5,000	1,300,000	419,848	261,896	61,259	41,375	41,222	14,096	0	36,241	0
North Carolina	1991	1,965,076	150,956	1,285,000	4,000	1,281,000	501,841	303,921	71,990	55,079	51,758	19,093	0	27,279	0
North Carolina	1993	2,745,087	174,294	1,929,000	16,000	1,913,000	604,581	377,983	74,041	69,950	63,862	18,745	0	37,212	0
North Carolina	1995	3,191,790	220,179	2,226,000	15,000	2,212,000	686,609	431,682	97,647	74,086	61,857	21,337	0	59,002	0
North Carolina	1997	4,667,017	229,610	3,590,000	111,000	3,478,000	785,980	439,124	115,804	96,116	105,767	29,169	0	61,427	0
North Dakota	1987	116,487	20,343	60,000	D	D	35,912	15,385	13,731	3,578	2,391	827	0	232	0
North Dakota	1989	75,833	20,217	27,000	D	27,000	27,951	19,396	918	2,521	4,113	1,003	0	665	0
North Dakota	1991	NA	23,938	D	D	D	48,930	21,570	1,327	2,308	22,336	1,389	0	1,231	0
North Dakota	1993	91,534	27,220	9,000	D	D	54,175	25,223	1,532	2,173	23,595	1,652	0	1,139	0
North Dakota	1995	97,606	25,042	12,000	D	D	59,617	27,841	1,534	3,346	25,043	1,853	0	947	0
North Dakota	1997	115,946	26,401	33,000	0	33,000	56,096	24,207	1,070	3,439	25,554	1,826	0	449	0

See explanatory information and SOURCE at end of table.

Table 4. State distribution of expenditures for R&D: performance by sector, categorized by sources of funds: 1987–97

Performing sector:		Total R&D	Federal Govt.	Industry			U&Cs						U&C FFRDCs	Other nonprofit institutions	Nonprofit FFRDCs
Funding sector:		Total R&D	Federal Govt.	Total	Federal Govt.[1]	Industry[2]	Total	Federal Govt.	Non-fed. Govt.	Industry	U&Cs	Nonprofits	Federal Govt.[3]	Federal Govt.[4]	Federal Govt.[4]
Location	Year[5]	(In thousands of current dollars)													
Ohio	1987	4,934,310	991,290	3,569,000	2,206,000	2,807,000	329,344	193,615	35,038	22,265	47,189	31,237	0	44,676	0
Ohio	1989	5,474,881	1,055,523	3,946,000	681,000	3,265,000	427,345	242,559	48,072	37,591	62,068	37,055	0	46,013	0
Ohio	1991	5,975,241	688,926	4,726,000	778,000	3,948,000	503,725	284,791	53,079	37,948	73,765	54,142	0	56,590	0
Ohio	1993	6,397,650	583,033	5,144,000	1,030,000	4,114,000	593,542	348,166	46,038	47,781	89,146	62,411	0	77,075	0
Ohio	1995	5,314,554	599,044	4,001,000	574,000	3,428,000	642,596	375,061	47,690	54,316	106,701	58,828	0	71,914	0
Ohio	1997	7,144,779	681,170	5,608,000	604,000	5,004,000	763,827	417,921	70,078	82,653	143,890	49,285	0	91,782	0
Oklahoma	1987	534,354	33,729	384,000	D	D	99,363	25,880	3,463	7,078	57,472	5,470	0	17,262	0
Oklahoma	1989	507,700	46,083	332,000	D	D	113,279	33,067	5,062	5,667	60,063	9,420	0	16,338	0
Oklahoma	1991	604,019	40,970	392,000	2,000	390,000	152,624	42,806	13,593	8,559	74,265	13,401	0	18,425	0
Oklahoma	1993	533,398	34,311	311,000	2,000	309,000	172,968	56,475	22,399	10,320	67,338	16,436	0	15,119	0
Oklahoma	1995	528,764	45,104	288,000	38,000	249,000	186,371	59,504	19,699	11,453	79,107	16,608	0	9,289	0
Oklahoma	1997	643,755	44,238	428,000	45,000	383,000	162,871	71,421	18,944	14,036	45,309	13,161	0	8,646	0
Oregon	1987	475,890	31,517	294,000	D	D	135,326	81,932	18,645	4,059	16,007	14,683	0	15,047	0
Oregon	1989	578,941	42,199	355,000	30,000	325,000	161,215	99,141	20,860	4,857	16,717	19,640	0	20,527	0
Oregon	1991	600,175	47,486	349,000	21,000	321,000	179,384	108,849	25,727	6,850	21,519	16,439	0	24,305	0
Oregon	1993	773,855	50,795	471,000	32,000	439,000	225,750	134,956	29,762	8,578	34,209	18,245	0	26,310	0
Oregon	1995	1,088,654	55,959	741,000	35,000	706,000	258,575	158,076	30,312	11,693	37,453	21,041	0	33,120	0
Oregon	1997	1,519,732	90,017	1,102,000	28,000	1,075,000	290,603	195,030	32,335	9,647	35,824	17,767	0	37,112	0
Pennsylvania	1987	5,633,446	284,237	4,630,000	1,380,000	3,250,000	611,935	385,912	23,559	66,246	85,399	50,819	14,000	93,274	0
Pennsylvania	1989	5,790,920	274,016	4,632,000	1,907,000	2,725,000	761,337	468,993	32,466	91,733	109,498	58,647	20,900	102,667	0
Pennsylvania	1991	7,620,947	315,003	6,262,000	2,060,000	4,202,000	878,826	552,239	26,532	100,210	141,865	57,980	27,100	137,865	153
Pennsylvania	1993	8,277,907	353,951	6,711,000	1,142,000	5,569,000	1,019,006	676,963	20,177	111,569	149,296	61,001	35,000	158,950	0
Pennsylvania	1995	6,918,955	227,520	5,331,000	376,000	4,955,000	1,139,531	754,444	34,954	120,303	164,296	65,534	31,525	189,379	0
Pennsylvania	1997	8,209,081	151,216	6,609,000	672,000	5,937,000	1,241,180	807,553	41,685	139,325	182,835	69,782	32,229	175,456	0
Rhode Island	1987	553,281	239,969	234,000	D	D	65,516	51,313	2,136	5,380	5,293	1,394	0	13,796	0
Rhode Island	1989	428,168	195,920	139,000	D	D	79,801	56,446	3,276	6,305	11,646	2,128	0	13,447	0
Rhode Island	1991	484,693	226,367	152,000	11,000	141,000	88,448	59,616	5,278	3,709	17,520	2,325	0	17,878	0
Rhode Island	1993	484,236	184,784	176,000	12,000	164,000	103,194	71,515	2,812	3,212	23,481	2,174	0	20,258	0
Rhode Island	1995	896,570	254,302	520,000	D	D	105,501	72,461	3,225	2,479	25,644	1,692	0	16,767	0
Rhode Island	1997	1,040,290	202,192	704,000	D	D	111,977	79,417	1,161	1,995	26,545	2,859	0	22,121	0

See explanatory information and SOURCE at end of table.

Table 4. State distribution of expenditures for R&D: performance by sector, categorized by sources of funds: 1987–97

Performing sector:		Total R&D	Federal Govt.	Industry			U&Cs						U&C FFRDCs	Other nonprofit institutions	Nonprofit FFRDCs
Funding sector:		Total R&D	Federal Govt.	Total	Federal Govt.[1]	Industry[2]	Total	Federal Govt.	Non-fed. Govt.	Industry	U&Cs	Nonprofits	Federal Govt.[3]	Federal Govt.[4]	Federal Govt.[4]
Location	Year[5]	(In thousands of current dollars)													
South Carolina	1987	640,738	11,527	523,000	D	D	95,811	34,350	14,061	6,184	37,110	4,106	0	10,400	0
South Carolina	1989	575,597	59,660	386,000	D	D	120,137	41,627	17,421	7,906	44,864	8,319	0	9,800	0
South Carolina	1991	594,444	13,955	419,000	D	D	151,204	54,045	16,858	15,903	54,011	10,387	0	10,285	0
South Carolina	1993	713,450	38,208	495,000	D	D	178,174	73,020	16,057	14,242	52,850	22,005	0	2,068	0
South Carolina	1995	996,261	34,441	739,000	D	D	220,088	109,443	17,899	19,364	53,994	19,388	0	2,732	0
South Carolina	1997	1,039,818	34,019	783,000	83,000	700,000	219,000	102,887	20,697	8,682	65,914	20,820	0	3,799	0
South Dakota	1987	21,311	5,685	4,000	0	4,000	11,395	5,129	4,789	472	739	266	0	231	0
South Dakota	1989	22,274	5,563	4,000	0	4,000	12,449	6,166	4,905	316	840	222	0	262	0
South Dakota	1991	32,297	9,470	5,000	0	5,000	15,959	6,917	6,539	310	1,520	673	0	1,868	0
South Dakota	1993	58,634	13,236	22,000	D	D	22,196	9,100	9,686	486	2,140	784	0	1,202	0
South Dakota	1995	54,667	13,428	19,000	0	19,000	21,392	10,623	6,772	469	2,341	1,187	0	847	0
South Dakota	1997	71,365	19,307	26,000	0	26,000	24,558	10,879	8,341	811	3,043	1,484	0	1,500	0
Tennessee	1987	950,871	125,890	649,000	D	D	155,163	84,030	28,035	11,757	24,124	7,217	9,000	11,818	0
Tennessee	1989	1,294,796	135,383	930,000	D	D	207,471	127,627	31,365	10,367	28,221	9,891	7,800	14,142	0
Tennessee	1991	1,142,486	123,708	737,000	D	D	243,763	150,274	32,927	12,359	34,772	13,431	10,400	27,515	100
Tennessee	1993	1,212,807	86,547	792,000	D	D	277,686	180,177	31,255	15,743	34,150	16,361	11,000	45,574	0
Tennessee	1995	1,402,742	62,100	1,003,000	D	D	308,155	191,797	35,395	16,345	45,116	19,502	9,612	19,875	0
Tennessee	1997	1,566,151	77,836	1,089,000	D	D	329,710	198,805	37,911	17,430	52,844	22,720	44,022	25,583	0
Texas	1987	5,454,724	340,803	4,261,000	1,784,000	2,477,000	809,781	403,285	92,020	46,903	168,648	98,925	0	43,140	0
Texas	1989	6,581,710	464,111	5,028,000	1,848,000	3,180,000	1,014,305	488,137	123,805	63,575	210,128	128,660	0	75,294	0
Texas	1991	6,635,249	405,267	4,755,000	D	D	1,215,548	550,558	139,019	79,964	283,850	162,157	2,300	257,134	0
Texas	1993	6,965,939	467,760	4,882,000	640,000	4,242,000	1,387,088	682,785	157,954	89,554	292,807	163,988	5,000	224,091	0
Texas	1995	8,384,534	537,508	6,211,000	912,000	5,298,000	1,472,165	747,687	158,886	102,486	296,606	166,500	0	163,001	860
Texas	1997	9,487,282	559,634	7,265,000	784,000	6,481,000	1,581,200	844,746	170,457	132,352	269,793	163,852	0	80,394	1,054
Utah	1987	1,031,253	99,166	809,000	D	D	120,878	81,355	13,412	5,734	16,178	4,199	0	2,209	0
Utah	1989	620,604	66,414	387,000	D	D	164,828	109,053	17,183	5,503	27,822	5,267	0	2,362	0
Utah	1991	664,474	103,269	356,000	51,000	305,000	201,470	137,613	16,756	6,880	33,779	6,442	0	3,735	0
Utah	1993	751,165	140,556	411,000	51,000	360,000	194,685	136,630	13,075	9,303	27,825	7,852	0	4,924	0
Utah	1995	1,144,080	131,138	803,000	178,000	625,000	202,212	140,600	15,431	9,456	28,065	8,660	0	7,730	0
Utah	1997	1,381,073	117,231	1,027,000	199,000	829,000	234,151	158,237	17,876	14,452	35,822	7,764	0	2,691	0

See explanatory information and SOURCE at end of table.

Table 4. State distribution of expenditures for R&D: performance by sector, categorized by sources of funds: 1987–97

Performing sector:		Total R&D	Federal Govt.	Industry			U&Cs						U&C FFRDCs	Other nonprofit institutions	Nonprofit FFRDCs
Funding sector:		Total R&D	Federal Govt.	Total	Federal Govt.[1]	Industry[2]	Total	Federal Govt.	Non-fed. Govt.	Industry	U&Cs	Nonprofits	Federal Govt.[3]	Federal Govt.[4]	Federal Govt.[4]
Location	Year[5]	(In thousands of current dollars)													
Vermont	1987	282,584	3,710	247,000	0	247,000	31,547	22,289	1,805	2,877	3,330	1,246	0	327	0
Vermont	1989	NA	4,404	D	D	D	42,743	28,535	2,500	3,486	5,485	2,737	0	2,639	0
Vermont	1991	NA	5,122	D	D	D	46,541	30,860	2,859	4,181	6,395	2,246	0	4,543	0
Vermont	1993	342,809	5,601	284,000	D	D	49,839	31,530	2,666	4,573	8,253	2,817	0	3,369	0
Vermont	1995	308,180	4,702	248,000	D	D	54,065	32,932	2,454	5,467	9,519	3,693	0	1,413	0
Vermont	1997	313,881	7,400	246,000	D	D	59,526	34,042	2,683	5,399	11,465	5,937	0	955	0
Virginia	1987	2,558,458	883,844	1,342,000	1,068,000	274,000	207,934	116,137	36,400	15,895	29,841	9,661	0	124,680	0
Virginia	1989	2,555,475	1,017,754	1,126,000	687,000	439,000	278,065	146,712	49,501	21,953	45,348	14,551	13,200	45,489	74,967
Virginia	1991	2,775,919	1,107,423	1,115,000	679,000	436,000	342,476	183,798	51,474	31,899	52,857	22,448	28,600	42,826	139,594
Virginia	1993	2,938,617	1,226,598	1,087,000	595,000	492,000	403,201	226,130	46,108	35,822	69,479	25,662	35,000	53,272	133,546
Virginia	1995	3,897,444	1,580,530	1,577,000	743,000	834,000	446,776	261,604	46,814	45,897	64,379	28,082	74,015	41,651	177,472
Virginia	1997	4,136,004	1,654,696	1,767,000	851,000	916,000	454,525	269,821	46,804	39,826	73,777	24,297	79,647	36,922	143,214
Washington	1987	3,520,818	122,468	3,071,000	D	D	235,927	166,458	5,561	21,183	33,623	9,102	0	91,423	0
Washington	1989	3,224,988	111,220	2,716,000	D	D	276,885	205,150	6,063	21,393	36,126	8,153	0	60,549	60,334
Washington	1991	3,889,660	132,503	3,215,000	D	D	349,667	253,381	11,351	28,107	45,229	11,599	0	72,156	120,334
Washington	1993	5,421,959	113,263	4,689,000	891,000	3,798,000	427,763	312,497	13,693	33,506	52,301	15,766	0	75,104	116,829
Washington	1995	5,240,679	159,837	4,294,000	D	D	485,970	340,327	13,761	39,429	77,212	15,241	0	95,900	204,972
Washington	1997	7,543,329	167,356	6,610,000	D	D	507,659	365,814	14,845	40,882	69,433	16,685	0	114,787	143,527
West Virginia	1987	187,642	56,605	87,000	D	D	26,704	13,011	871	884	10,736	1,202	17,000	333	0
West Virginia	1989	NA	63,239	D	D	80,000	39,368	17,339	1,255	3,963	15,081	1,730	18,400	2,098	0
West Virginia	1991	NA	76,078	D	D	69,000	50,772	20,479	1,564	11,170	13,191	4,368	21,900	4,985	0
West Virginia	1993	279,583	93,059	100,000	D	D	55,021	31,662	2,004	3,973	14,132	3,250	28,000	3,503	0
West Virginia	1995	475,040	139,595	243,000	D	D	53,399	30,464	2,023	3,160	13,470	4,282	33,047	5,999	0
West Virginia	1997	427,415	86,663	233,000	D	D	63,638	29,623	2,413	3,719	23,190	4,693	33,172	10,942	0
Wisconsin	1987	1,538,985	21,745	1,217,000	36,000	1,181,000	297,411	170,235	49,800	11,446	42,017	23,913	0	2,829	0
Wisconsin	1989	1,398,630	26,945	1,030,000	32,000	998,000	336,815	197,818	55,372	16,268	43,304	24,053	0	4,870	0
Wisconsin	1991	1,573,365	32,321	1,140,000	24,000	1,116,000	387,621	217,590	64,386	18,715	52,522	34,408	0	13,423	0
Wisconsin	1993	1,851,751	38,190	1,343,000	D	D	444,192	255,195	68,410	18,698	53,725	48,164	0	26,369	0
Wisconsin	1995	2,226,046	40,344	1,706,000	33,000	1,673,000	472,982	270,622	42,549	16,873	92,115	50,823	0	6,720	0
Wisconsin	1997	2,255,616	42,606	1,707,000	29,000	1,678,000	497,289	283,701	41,073	19,075	97,873	55,567	0	8,721	0

See explanatory information and SOURCE at end of table.

Table 4. State distribution of expenditures for R&D: performance by sector, categorized by sources of funds: 1987–97

Performing sector:		Total R&D	Federal Govt.	Industry			U&Cs						U&C FFRDCs	Other nonprofit institutions	Nonprofit FFRDCs
Funding sector:		Total R&D	Federal Govt.	Total	Federal Govt.[1]	Industry[2]	Total	Federal Govt.	Non-fed. Govt.	Industry	U&Cs	Nonprofits	Federal Govt.[3]	Federal Govt.[4]	Federal Govt.[4]
Location	Year[5]	(In thousands of current dollars)													
Wyoming	1987	35,803	8,146	4,000	0	4,000	17,316	8,701	1,129	1,216	6,176	94	0	6,341	0
Wyoming	1989	NA	8,519	D	D	D	23,310	13,804	1,539	1,535	6,226	206	0	20,858	0
Wyoming	1991	41,037	9,339	2,000	0	2,000	23,009	12,782	1,848	2,000	6,140	239	0	6,689	0
Wyoming	1993	62,907	10,068	15,000	D	D	32,556	14,575	4,111	2,268	10,637	965	0	5,283	0
Wyoming	1995	86,767	8,669	25,000	D	D	40,470	15,373	3,125	1,930	17,454	2,588	0	12,628	0
Wyoming	1997	86,942	8,720	28,000	0	28,000	47,753	15,003	5,990	2,226	23,743	791	0	2,469	0

[1] Includes performance at industry FFRDCs.

[2] Industry sources of industry R&D expenditures include all non-federal sources of industry R&D expenditures.

[3] Includes total R&D expenditures of FFRDCs administered by academic institutions.

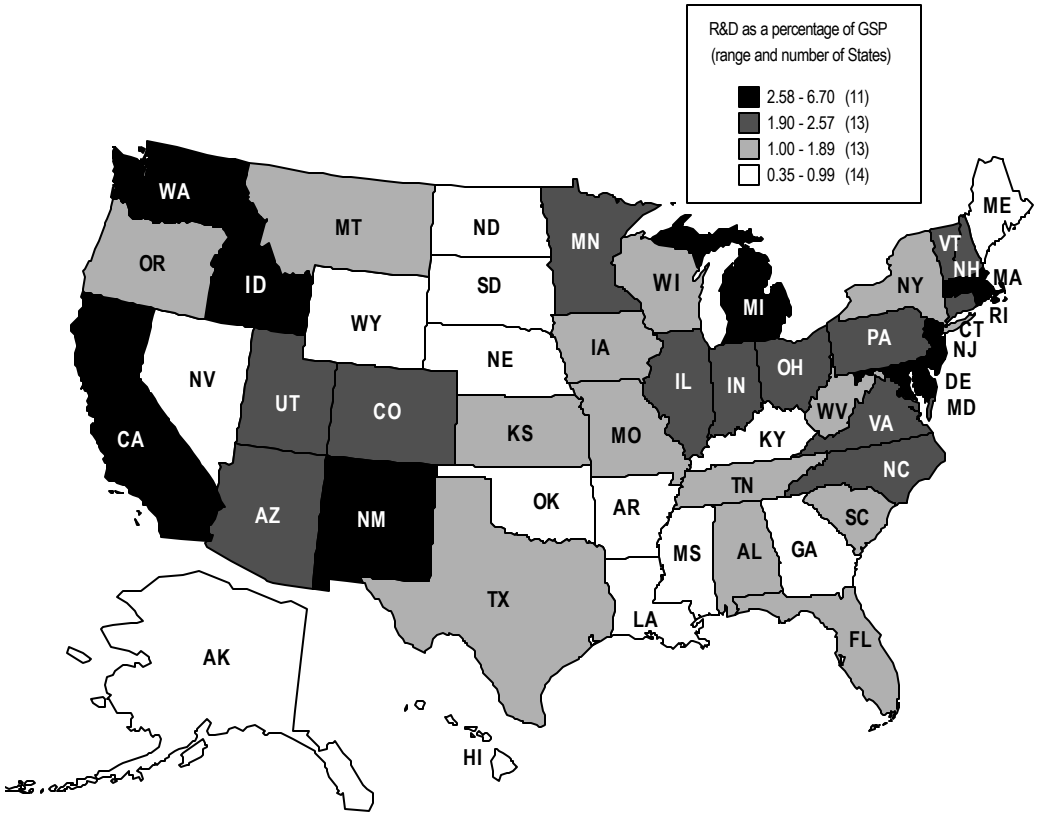
[4] Other sources of support for nonprofit institutions were unavailable.

[5] Industry R&D data are in reference to calendar years; other R&D data are in reference to fiscal years but may serve as approximations to calendar year data.

KEY: FFRDCs = Federally Funded Research and Development Centers
U&Cs = Universities and colleges
NA = Not available
D = Data withheld to avoid disclosing operations of individual companies, or because of imputations of more than 50 percent.

SOURCE: National Science Foundation/Division of Science Resources Studies, *National Patterns of R&D Resources,* annual series.

Figure 2. Distribution of States, by R&D as a percentage of GSP: 1997



NOTE: GSP = Gross State Product

SOURCES: National Science Foundation/Division of Science Resources Studies, *National Patterns of R&D Resources,* annual series; and U.S. Department of Commerce, Bureau of Economic Analysis.

Massachusetts, and Washington all had relatively high levels of R&D in the nonmanufacturing sector (25 percent or more of the total) (figure 3). Lower levels of R&D in nonmanufacturing, as a percentage of the total, were observed for Michigan, Texas, Pennsylvania, Illinois, and Ohio. The particular areas of nonmanufacturing with the highest levels of R&D were trade, business services, and engineering and management services.

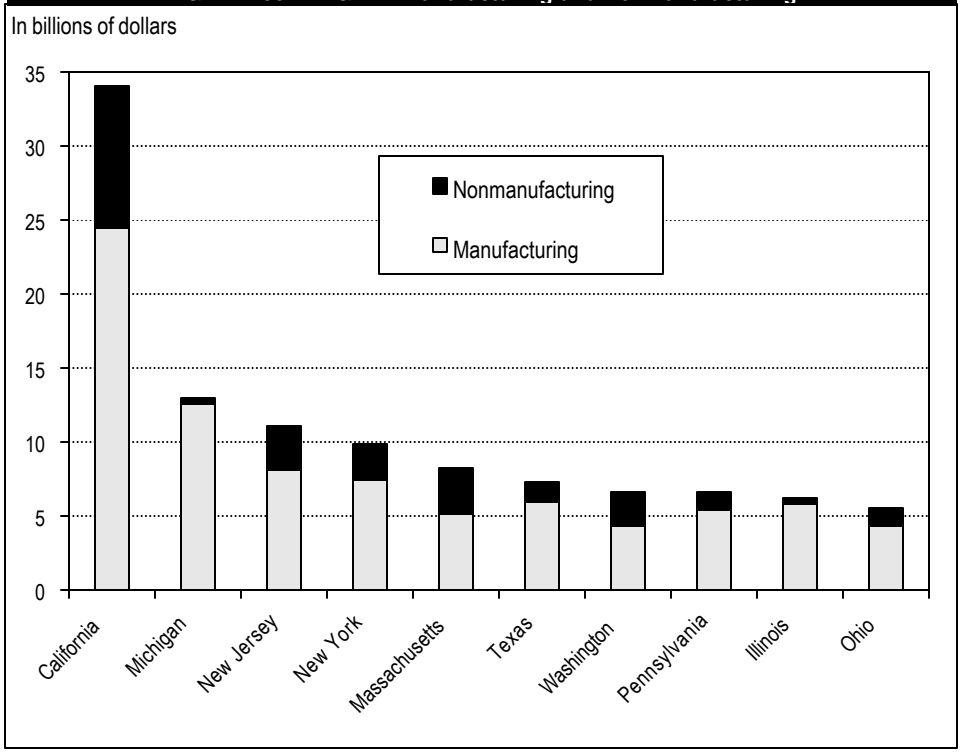
With regard to R&D in manufacturing, States varied widely in terms of which types of industries performed the most R&D (table 5). In California, particularly high levels of R&D performance in 1997 are observed in the following sectors: machinery ($5.8 billion), electrical equipment ($7.5 billion), transportation equipment ($4.2 billion), and professional and scientific instruments ($3.8 billion). In Michigan, as would be expected, the vast majority of R&D in manufacturing occurred in the transportation equipment sector ($9.6 billion of the State's total of $12.5 billion devoted to R&D in manufacturing). In New Jersey, chemicals accounted for the State's highest level of R&D performance ($3.5 billion), followed by electrical equipment ($1.5 billion) and professional and scientific instruments ($1.2 billion). In New York, machinery accounted for the highest amount of R&D performed ($1.5 billion); in Massachusetts it was professional and scientific instruments ($1.8 billion); and in Texas it was electrical equipment ($2.8 billion). In Pennsylvania, chemicals had the largest R&D performance ($2.4 billion), while electrical equipment had the highest levels in Illinois and Ohio.

Federal Support for R&D

The top 10 Federal agencies that fund R&D reported a total of $68 billion in Federal R&D obligations to all types of performers in 1997 (table 6).[6] The Department of Defense (DoD) and the Department of Health and Human Services (HHS) together provided 69 percent of this total.

California and Maryland were the two largest recipients of these Federal R&D funds. Performers in California, primarily industrial firms, received 24 percent of DoD's R&D support. Maryland received 24 percent

Figure 3. Industrial R&D performance in the top 10 States in industrial R&D in 1997[1]: R&D in manufacturing and nonmanufacturing



[1]These levels include R&D performed by industry-administered FFRDCs.

SOURCE: National Science Foundation/Division of Science Resources Studies, Survey of Industrial Research and Development: 1997

[6] Data in this section and in table 6 are based on Federal agency reports. See "Technical Note: Differences in performer-reported and source-reported Federal R&D."

Table 5. Total (company, Federal, and other) funds for industrial R&D performance, by industry and size of company, for the U.S. and top 10 R&D-performing States: 1997

Industry	SIC code	U.S. total	Top 10 States										All other States plus undistributed
			California	Michigan	New Jersey	New York	Massa-chusetts	Texas	Wash-ington	Penn-sylvania	Illinois	Ohio	
		(In million of dollars)											
All Industries		157,539	34,011	13,009	11,069	(S) 9,939	8,300	7,265	(S) 6,610	(S) 6,609	6,248	5,608	48,871
Manufacturing		121,025	24,488	12,532	8,180	7,503	5,194	5,912	(S) 4,330	5,396	5,835	4,296	37,358
Food, kindred, and tobacco products	20,21	1,787	39	D	187	40	D	29	D	52	295	39	998
Textiles and apparel	22,23	D	D	3	D	26	23	(S) 10	0	D	0	D	397
Lumber, wood products, and furniture	24,25	348	35	75	37	D	0	1	D	D	3	5	179
Paper and allied products	26	D	D	D	D	63	24	D	D	17	48	26	1,123
Chemicals and allied products	28	D	1,674	1,003	3,543	902	429	453	D	2,388	1,378	981	6,216
Petroleum refining and extraction	13,29	D	D	D	D	21	D	422	0	56	D	D	393
Rubber products	30	D	130	46	21	65	73	23	D	53	31	(S) 461	480
Stone, clay, and glass products	32	608	10	D	0	D	D	D	0	156	(S) 22	126	98
Primary metals	33	988	D	28	(S) 25	(S) 30	D	(S) 65	D	(S) 170	D	99	408
Fabricated metal products	34	1,798	326	66	14	35	204	28	10	257	83	146	628
Machinery	35	18,499	5,818	989	D	1,485	656	1,153	D	381	716	369	5,618
Electrical equipment	36	24,585	7,480	D	1,468	727	1,715	(S) 2,805	D	647	2,398	866	6,128
Transportation equipment	37	31,993	(S) 4,225	9,623	25	D	29	D	D	(S) 401	144	722	10,173
Professional and scientific instruments	38	13,458	3,795	123	1,194	1,265	(S) 1,782	89	180	651	(S) 365	204	3,811
Other manufacturing industries	27,31,39	2,798	626	249	89	95	222	128	57	154	239	231	709

See explanatory information and SOURCE at end of table.

Table 5. Total (company, Federal, and other) funds for industrial R&D performance, by industry and size of company, for the U.S. and top 10 R&D-performing States: 1997

Industry	SIC code	U.S. total	Top 10 States										All other States plus undistributed
			California	Michigan	New Jersey	New York	Massa-chusetts	Texas	Wash-ington	Penn-sylvania	Illinois	Ohio	
		(In millions of dollars)											
Nonmanufacturing		36,514	9,523	477	2,888	2,435	3,106	1,353	2,281	1,212	413	1,311	11,513
Transportation and utilities	40–42,44–49	3,013	110	D	D	93	D	D	0	28	14	498	1,101
Trade	50–59	D	2,348	D	715	919	1,102	421	31	131	46	71	2,190
Finance, insurance, and real estate	60–65,67	D	53	D	D	299	D	D	0	D	91	D	889
Business services	73	11,960	3,350	S 201	855	616	790	530	1,893	227	117	127	3,254
Health services	80	D	37	0	D	D	0	0	D	D	D	0	71
Engineering and management services	87	9,290	2,872	195	329	393	D	220	315	D	76	462	3,254
Other services	701,72,75–79, 81,83,84,89	D	302	2	D	D	D	0	D	D	D	6	141
Other nonmanufacturing industries	07–12,14,15, 161–162,17	1,618	452	68	34	108	5	D	40	D	49	D	613

KEY: D = Data have been withheld to avoid disclosing operations of individual companies.
(S) = Indicates imputation of more than 50 percent.

SOURCE: National Science Foundation/Division of Science Resources Studies, Survey of Industrial Research and Development: 1997

Table 6. Federal R&D obligations, by agency and State: FY 1997

Agency	Total R&D (In millions of dollars)	Largest recipient		Second-largest recipient	
		State	Percent of total	State	Percent of total
Total for the ten agencies listed	68,424	California	20.1	Maryland	10.7
Department of Agriculture	1,378	District of Columbia	11.3	Maryland	9.1
Department of Commerce	1,002	Maryland	33.7	Colorado	8.2
Department of Defense	34,608	California	23.6	Virginia	11.2
Department of Energy	5,601	New Mexico	20.0	California	18.4
Department of Health and Human Resources	12,742	Maryland	23.6	California	10.9
Department of the Interior	558	Virginia	16.7	Colorado	11.8
Department of Transportation	526	District of Columbia	25.1	New Jersey	12.6
Environmental Protection Agency	491	North Carolina	25.5	District of Columbia	12.7
National Aeronautics and Space Administration	9,280	California	28.0	Texas	18.5
National Science Foundation	2,238	California	14.3	New York	8.7

SOURCE: National Science Foundation/Division of Science Resources Studies, *Federal Funds for Research and Development: Fiscal Years 1997, 1998, 1999.*

of HHS's funding, largely supporting intramural activities undertaken at biomedical research facilities at the National Institutes of Health (NIH). California received more R&D funds from both National Aeronautics and Space Administration (NASA) and NSF than any other State. The main recipients in California of NASA R&D funding were FFRDCs (most notably, its Jet Propulsion Laboratory) and industrial firms. The main recipients of NSF funding were universities and colleges. Maryland had the largest share of any one Federal agency's total R&D support, with 34 percent of the Department of Commerce's (DOC) R&D funds. Intramural research activities accounted for most of this funding, associated primarily with DOC's National Institute of Standards and Technology (NIST).

Technical Note: Differences in Performer-Reported and Source-Reported Federal R&D

The NSF collects, and this report contains, two separate estimates on total Federal funding of R&D. Survey data are obtained from both Federal funding agencies and performers of the work (Federal labs, industry, universities, and other nonprofit organizations). National totals, however, are based on data reported by performers because they are in the best position to indicate how much they spent in the actual conduct of R&D in a given year, and to identify the sources of their funds. Performer reporting also reduces the possibility of double-counting and conforms to international standards and guidance.

At certain points in history the two survey systems of sources and performers tracked fairly closely. For example, in calendar year 1980, performers reported using $30.0 billion in Federal R&D funding; Federal agencies reported total R&D obligations for fiscal year 1980 of $29.8 billion. In recent years, the two series have diverged considerably: For calendar year1997, performers report $65.0 billion in Federal R&D support, compared with the $69.8 billion in obligations reported by Federal agencies for fiscal year 1997 (table 7).[7] The difference in the Federal R&D data totals appears to be concentrated in funding of industry. Overall, in each year since 1989, industrial firms have reported less in Federal R&D support than the amounts that Federal agencies have reported in supporting industrial R&D, even though in some of the earlier years industrial firms had reported more in Federal support than what Federal agencies reported. The difference has been as large as $9.3 billion, observed in 1994. For 1997, Federal agencies reported $31.4 billion in total R&D obligations provided to industrial performers, compared with $23.9 billion in Federal R&D funding reported by industrial performers (table 8). Consequently, data users are cautioned to exercise considerable care in comparing the R&D performance data in table 2 (and detailed in the upper half of the state profiles) with the funding data reported by Federal agencies in table 6 (and detailed in the lower half of the profiles). NSF has been investigating the causes of these divergent trends.

[7] Note that the $68.4 billion in table 6 and in the U.S. total in the State profiles differs from the $69.8 billion amount because State-specific data are collected from just 10 Federal agencies.

Table 7. Difference in agency-reported and performer-reported Federal R&D, all performers: 1978–97

Year	Reported by Federal agencies (by fiscal year)			Performer-reported expenditures (calendar year)
	Authorizations	Obligations	Outlays	
	(In millions of dollars)			
1978	25,976	25,845	24,020	24,468
1979	28,208	28,145	25,838	27,303
1980	29,739	29,830	29,154	30,035
1981	33,735	33,104	32,459	33,714
1982	36,115	36,433	34,391	37,233
1983	38,768	38,712	36,659	41,576
1984	44,214	42,225	39,691	46,571
1985	49,887	48,360	44,171	52,748
1986	53,249	51,412	50,609	54,711
1987	57,069	55,254	51,612	58,548
1988	59,106	56,769	54,739	60,179
1989	62,115	61,406	59,450	60,488
1990	63,781	63,559	62,135	61,668
1991	65,898	61,295	61,130	60,821
1992	68,398	65,593	62,934	60,922
1993	69,884	67,314	65,241	60,524
1994	68,331	67,235	66,151	60,881
1995	68,791	68,187	66,662	63,220
1996	69,049	67,655	66,142	63,547
1997	71,653	69,830	68,897	65,016

SOURCES: National Science Foundation/Division of Science Resources Studies, *Federal Funds Survey, Detailed Historical Tables, Fiscal Years 1951–98; Federal Funds for Research and Development: Fiscal Years 1997, 1998, and 1999; Federal R&D Funding by Budget Function: Fiscal Years 1998-2000;* and *National Patterns of R&D Resources: 1999 Data Update.*

Table 8. Difference in agency-reported and performer-reported Federal R&D: industrial performers by agency source: 1980–97

Year	Industry survey (calendar year)[1]			Federal survey—obligations (fiscal year)[1]			Difference in report totals		
	Total	Department of Defense	Other agencies	Total	Department of Defense	Other agencies	Total	Department of Defense	Other agencies
	(In millions of dollars)								
1980	14,029	NA	NA	14,377	NA	NA	(348)	NA	NA
1981	16,382	10,540	5,842	16,282	10,931	5,351	100	(391)	491
1982	18,545	NA	NA	18,699	NA	NA	(154)	NA	NA
1983	20,680	14,571	6,109	18,521	14,671	3,850	2,159	(100)	2,259
1984	23,396	NA	NA	20,219	NA	NA	3,177	NA	NA
1985	27,196	20,948	6,248	23,496	19,069	4,427	3,700	1,879	1,821
1986	27,891	NA	NA	25,898	NA	NA	1,993	NA	NA
1987	30,752	22,252	8,500	28,628	24,258	4,370	2,124	(2,006)	4,130
1988	30,343	NA	NA	28,631	NA	NA	1,712	NA	NA
1989	28,554	NA	NA	30,604	25,043	5,561	(2,050)	NA	NA
1990	28,125	NA	NA	31,697	NA	NA	(3,572)	NA	NA
1991	26,372	NA	NA	28,589	21,350	7,239	(2,217)	NA	NA
1992	24,722	NA	NA	31,862	NA	NA	(7,140)	NA	NA
1993	22,809	15,044	7,765	31,670	23,856	7,814	(8,861)	(8,812)	(49)
1994	22,463	NA	NA	31,748	NA	NA	(9,285)	NA	NA
1995	23,451	13,876	9,575	31,674	22,645	9,029	(8,223)	(8,769)	546
1996	23,653	NA	NA	31,498	NA	NA	(7,845)	NA	NA
1997	23,928	12,603	11,325	31,418	24,097	7,321	(7,490)	(11,494)	4,004

[1]Includes industry-admininstered federally funded research and development centers (FFRDCs).

KEY: NA = Not available; numbers in parentheses are negative

NOTES: Data from the Industry Survey are R&D expenditures as reported by performing firms. Data from the Federal Survey are R&D obligations to industry as reported by Federal agencies. The last three columns report the difference between the two data series.

SOURCES: National Science Foundation/Division of Science Resources Studies, *Federal Funds Survey, Detailed Historical Tables, Fiscal Years 1951–98; Federal Funds for Research and Development: Fiscal Years 1997, 1998, and 1999;* and *Research and Development in Industry: 1997.*